highly conserved 111 bps at the 3'-terminal sequence observed among these Thai DEN-3 viruses suggests that it may represent a functional role of the dengue viral 3'-NCR where all or most of the important elements in viral translation, replication and assembly are concentrated. However, this highly conserved 111 bps at the 3'- terminal may not involve the viral pathogenicity as well as severity since the same sequence was existed in the genomes of all these Thai DEN-3 viruses with different severity.

10th Asean Conference in Medical Laboratory Technology (ACMLT). Chiang Mai, Thailand. 2004. 26-30 April 2004. Abstract no. C023:215. (Poster)

IDENTIFICATION OF CONCURRENT INFECTIONS BY MULTIPLE DENGUE VIRUS SEROTYPES IN THAI CHILDREN

Zhang C, Chinnawirotpisan P, Klungthong C, Thirawuth V, Narupiti S and Mammen MP Jr

Concurrent infection with more than one dengue virus (DENV) serotype has been reported from Puerto Rico, New Caledonia, Taiwan and Brazil. We provide, to our knowledge, the first case report in the medical literature of a concurrent infection with three dengue virus serotypes (DENV-l/DENV-2/DENV-3). In addition, the first report of dual dengue virus infections occurring in Thailand (DENV-l/DENV-3 or DENV-2/DENV-4). Serotype identification was determined from serum by reverse transcriptase-polymerase chain reaction (RT-PCR) and further confirmed by sequence analysis of each amplified PCR product. Phylogenetic analyses of the amplified DNA fragments further support concurrent infections by two or three dengue virus serotypes. Our report suggests molecular diagnostic tests (RT-PCR) supporting dengue virus surveillance must be designed to adequate sensitivity to detect the presence of multiple dengue virus serotypes in a single physiologic sample.

Abstract of the Joint International Tropical Medicine Meeting (JITMM). Bangkok, Thailand. 29 November-1 December 2004:166.

IDENTIFICATION OF CONCURRENT INFECTIONS BY TWO OR THREE DENGUE VIRUS SEROTYPES IN THAI CHILDREN

Zhang C, Chinnawirotpisan P, Klungthong C, Thirawuth V, Narupiti S and Mammen MP Jr

Concurrent infections with two dengue virus (DENV) serotypes in the same patient have been reported previously in Puerto Rico, New Caledonia, Taiwan and Brazil. We provide, to our knowledge, the first report of a case of dengue fever associated with viremia with concurrent infection in the same individual by three dengue virus serotypes (DENV-1/DENV-2/DENV-3). Additionally, we provide, to our knowledge, the first report of concurrent infection by two dengue virus serotypes (DENV-1/DENV-3 or DENV-2/DENV-4) in Thailand. Serotype identification was determined directly from serum by reverse transcriptase-polymerase chain reaction (RT-

PCR) and further confirmed by sequence analysis of each amplified PCR product. The data of phylogenetic analyses for these amplified DNA fragments further supported concurrent infections by two or three dengue virus serotypes. Our report suggests that continued dengue surveillance must be designed so as to be acutely sensitive to the detection of multiple dengue virus serotypes by RT-PCR.

1st Regional Meeting of Pediatric Dengue Vaccine Initiative (PDVI). Bangkok, Thailand. 18-20 October 2004. (Poster)

IDENTIFICATION OF DENGUE SEROTYPES ALONG THE THAI-LAOS BORDER USING THE NASBA TECHNIQUE

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In this study, dengue serotypes were detected by NASBA technique. The samples were 402 probable DF/DHF patients and 171 students, aged 5-15 years old and living in Nhong Kai, Nakhorn Phanom, and Mukdahan provinces. Data were collected from June to September 2002. The samples were tested by Combo Q Check test kit, enzyme-linked immunosorbent assay (ELISA), polymerase chain reaction (PCR), and nucleic acid sequence-based amplification (NASBA). Descriptive statistics, Cochran's Q test, McNemar test, and Kappa were used for statistical analysis. Four serotypes of dengue virus were found in 2 provincial hospitals, except in Mukdahan Provincial Hospital, where only dengue virus serotype 2 was detected by PCR and NASBA. There was excellent correlation in determining dengue serotypes between PCR and NASBA (Cochran's Q test, P = 0.0065, N =75), while the positive cases determined by ELISA were more than those determined by Combo Q Check test (McNemar test, P = 0.02, N = 78). Compared to the PCR method, the sensitivities of NASBA by dengue 1-4 were 100, 100, 88.89, and 100%, respectively, while the specificities of NASBA by dengue 1-4 were 100, 99.32, 100 and 100%, respectively. For serotyping, NASBA showed similar specificity and sensitivity to PCR ($\kappa = 0.97$), was rapid, and used only a heating block and water bath. Therefore, the NASBA technique was more suitable in the field than PCR. (ACMCIP abstract)

53rd Annual Meeting of the American Society Tropical Medicine and Hygiene (ASTMH). Miami, Florida, USA. 7-11 November 2004.

Am J Trop Med Hyg. 2004; 70(4 suppl):67.

Abstract of the Joint International Tropical Medicine Meeting (JITMM). Bangkok, Thailand. 29 November-1 December 2004:107.